

CLAIMS

Sub 1. An air extraction apparatus for a work station, especially one at which heat is supplied to food, having formed on both sides of the work station respective air openings which are connected to a blower and a filter arrangement, characterized in that

the air openings (36, 38), the blower (26), the filter arrangement (28) and a region 42 located between the air openings (36, 38) and immediately above the work station (14), form a closed air circulation loop (48) which produces an air curtain (44) during operation of the air extraction apparatus (12) in the region between the air opening (36) on an upstream side of the work station (14) and the air opening (38) on a downstream side of the work station (14),

the blower (26) and the filter arrangement (28) are housed in a space (24, 24') which lies within the air circulation loop (48) and is connected to the air openings (36, 38) on both sides of the work station (14),

the air circulation loop (48) includes an air outlet (50) for a portion (52) of the air from the air circulation loop (48), the air outlet (50) being located downstream from the blower (26) and the filter arrangement (28), and

the blower (26) is located between at least two filters (30, 32) of the filter arrangement (28), the filter upstream of the blower (26) being a grease separating filter (30) and the filter downstream of the blower (26) being an odor filter (32).

2. An air extraction apparatus according to claim 1, characterized in that the air outlet (50) has an opening of adjustable size.
3. An air extraction apparatus according to claim 1 or 2, characterized in that the blower (26) is a centrifugal blower.
4. An air extraction apparatus according to one of claims 1 - 3, characterized in that the grease separating filter (30) is a cyclone filter.
5. An air extraction apparatus according to one of claims 1 - 4, characterized in that a grease collecting pan (56) is located beneath the grease separating filter (30).
6. An air extraction apparatus according to one of claims 1 - 5, characterized in that the odor filter (32) is a zeolite filter.
7. An air extraction apparatus according to one of claims 1 to 6, characterized in that the air circulation loop (48) has two vertical air channels (39, 40) in the region below the work station (14), above which the space in which the blower (26) and the filter apparatus (28) are housed is connected to air openings (36, 38) on both sides of the work station (4).

8. An air extraction apparatus according to one of claims 1 - 6, characterized in that the space (24') in which the blower (26) and the filter installation (28) are housed, is located beside the work station (14).
9. An air extraction apparatus according to one of claims 1 - 8, characterized in that the grease separating filter (30) and the odor filter (32) are positioned inclined with respect to the vertical (39, 40).
10. An air extraction apparatus according to claim 9, characterized in that the grease separating filter (30) is inclined with respect to the vertical at an angle of 40° to 50° , preferably of 45° .
11. An air extraction apparatus according to claim 9 or 10, characterized in that the odor filter (32) is inclined with respect to the vertical at an angle of 30° to 40° , preferably of 35° .
12. An air extraction apparatus according to one of claims 9 - 11, characterized in that the space (24, 24') in which the blower (26) and the filter arrangement (28) are housed, is divided by the two filters (30, 32) into an entry and exit chamber (58, 60) respectively.

13. An air extraction apparatus according to claim 12, characterized in that the air outlet (50) is located in a wall of the exit chamber (60).
14. An air extraction apparatus according to claims 7 or 8, characterized in that the work station (14) is a grill which extends above the space in which the blower (26) and the filter installation (28) are installed or beside that space (24').
15. An air extraction apparatus according to one of claims 1 - 14, characterized in that the air outlet (50) is so-shaped or adjusted that 75% of the air is released from the air circulation loop (48) and the remaining 25% reach the work station (14) as ambient air and form its air curtain (44).
16. An air extraction apparatus according to one of claims 1 - 15, characterized by at least one air intake (38; 63) for drawing ambient air into the air circulation loop (48) to replace the air released into the surroundings through the air outlet (50) from the air circulation loop (48).
17. An air extraction apparatus according to claim 16, characterized in that the air opening (38) is on the downstream side of the work station (14).

18. An air extraction apparatus according to claim 16, characterized in that the air intake is an additional air opening (63) located downstream from the air opening (38) on the downstream side of the work station (14) and upstream of the blower (26).

19. An air extraction apparatus according to one of claims 1 - 18, characterized in that it forms a kitchen module (10) integrated into a kitchen work station.

20. An air extraction apparatus according to one of claims 1 - 19, characterized in that both air openings (36, 38) are so located relative to each other that an air flow axis symbolizing the air curtain (44) is inclined slightly downwardly with respect to the horizontal toward the downstream air opening (38).

21. An air extraction apparatus according to one of claims 1 - 20, characterized in that the upstream air opening (36) is formed as a narrow exit slot and that the oppositely located downstream air opening (38) takes the form of a substantially broader intake slot.

22. An air extraction apparatus according to claim 21, characterized in that the exit slot and the intake slot are formed by air guiding elements (64-67) in the vertical air channels (39, 40).

23. An air extraction apparatus according to claim 22, characterized in that the exit slot is inclined slightly downwardly with respect to the horizontal and in that the intake slot is provided with radii located on its oppositely positioned inner walls.

24. An air extraction apparatus according to one of claims 1 - 23, characterized in that a segment of the vertical air channel which extends behind the downstream air opening (38) is covered upwardly by an air guiding element (65).

25. An air extraction apparatus according to claim 24, characterized in that, for increasing size of the work station and resulting increasing spacing between the upstream and downstream air openings (36, 38), the covering upper air guiding element (65', 65'') is increasingly shortened.

26. An air extraction apparatus according to claim 25, characterized in that the air guiding element (65'') has an S-shaped cross-section.

27. An air extraction apparatus according to one of claims 1 - 26, characterized in that the work station (14) above the air openings (36, 38) is surrounded on three sides, not including its operator's side (13), by an air guiding wall, especially a splash guard (11), which increases

in height starting from the operator's side (13) in a direction transverse to the air curtain (44) toward the opposite side of the work station.

28. An air extraction apparatus according to claim 27, characterized in that the air guiding wall (11) is a U-shaped edge-encircling metal sheet.

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